

My NASA Data – Data Literacy Cubes



The tools in this guide are resources to support data literacy in your instructional setting with My NASA Data Earth science materials. These flexible resources may be used with graphs, data tables, and mapped images of NASA Earth science data. To access NASA data, visit the My NASA Data visualization tool, Earth System Data Explorer (<https://mynasadata.larc.nasa.gov>).

The Data Literacy Cube set includes:

- Cube templates (*Gaming dice may be substituted for the cubes.*) Each cube type has an icon associated with it. Icons are displayed on the right side of My NASA Data pages to indicate which cubes could be used with the content on the page. It is also possible to search content by cube type.



- Leveled question sheets to help you differentiate your instruction
Note: This guide provides a labeled version identifying the different question sheets, as well as an unlabeled version for you to use at your discretion. See the bottom left for this designation on each labeled question sheet.

Beginner

Intermediate

Advanced

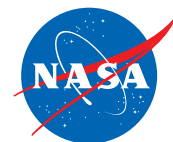
English Language Learners

A**B****C****D**

How to use the Data Literacy Cubes and leveled questions:

1. Access Earth science data from the My NASA Data website and the Earth System Data Explorer visualization tool (<https://mynasadata.larc.nasa.gov/EarthSystemLAS/UI.vm>).
2. Differentiate your lesson based on your students' needs and abilities. See versions A-D to select the leveled question sheets and distribute to students.
3. Instruct students to roll cube (or numbered die) to answer appropriate question/s.
4. Visit the *Maps*, *Graphs*, and *Data* sections on My NASA Data to access mini lessons and resources from each of the following spheres:
 - Atmosphere <https://mynasadata.larc.nasa.gov/atmosphere>
 - Biosphere <https://mynasadata.larc.nasa.gov/biosphere>
 - Cryosphere <https://mynasadata.larc.nasa.gov/cryosphere>
 - Geosphere <https://mynasadata.larc.nasa.gov/geosphere>
 - Hydrosphere <https://mynasadata.larc.nasa.gov/hydrosphere>
 - Earth as a System <https://mynasadata.larc.nasa.gov/earthsystem>





Map Cube



1. Examine the map.



Map Cube

2. Where on Earth is this map?



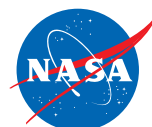
Map Cube

5. When were the data on this map collected?



Map Cube

3. Summarize the map.



Map Cube

6. Ask a question about the map.

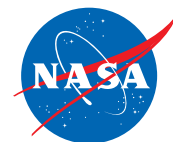


Map Cube

4. Analyze the map.



Map Cube



Map Cube Questions

1. Examine the map.

- A. The color that shows the most is _____. It means _____.
- B. The color that you do not see much is _____. It means _____.

2. Where on Earth is this map?

- A. A place I know on the map is _____.
- B. Another place I know on the map is _____.

3. Summarize the map.

- A. The different colors stand for the variable _____. It is measured in _____.
(unit)
- B. The color with the biggest value/number is _____.
- C. The color with the smallest value/number is _____.
- D. The color in the middle is _____. Its value is _____.

4. Analyze the map.

- A. The area/s with the highest values is/are _____. This means _____.
- B. The area/s with the lowest values is/are _____. This means _____.

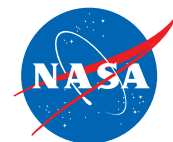
5. When were the data on this map collected?

- A. The date/s shown on the map is/are _____.
- B. A key word in the title that tells me the time frame of this map is _____.

6. Ask a question about the map.

- A. How does...?
- B. I wonder if...
- C. How is _____ the same as? Different than?
- D. How many...? How long...? How often...?





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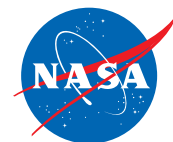
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Map Cube Questions

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- A. The colors that show the most represent _____.
- B. The colors that show the least represent _____.
- C. I observe a pattern which shows _____.

2. Where on Earth is this map?

- A. A place I recognize on the map is _____. The longitude is _____.
- B. Another place I know on the map is _____. The latitude is _____.
- C. A region I recognize is _____.

3. Summarize the map.

- A. The scale of the colors represents the variable _____.
- B. The unit for the variable is _____.
- C. This variable explains _____.

4. Analyze the map.

- A. The area/s with the highest values is/are _____. This represents _____.
- B. The area/s with the lowest values is/are _____. This represents _____.
- C. The values change from _____ to _____ in the _____ hemisphere.

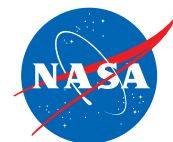
5. When were the data on this map collected?

- A. The time frame for the map is _____.
- B. If the time frame/area etc. changes to _____, then the variable will _____.

6. Ask a question about the map.

- A. I wonder if...
- B. How many...? How long...? How often...?





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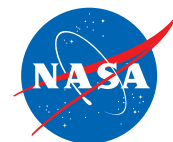
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Map Cube Questions

1. Examine the map.

- A. What do the colors that show the most represent?
- B. What do the colors that show the least represent?
- C. What pattern do you observe?

2. Where on Earth is this map?

- A. What is the latitude and longitude range?
- B. Identify a place you recognize and its approximate latitude and longitude.
- C. What type of map projection is this?

3. Summarize the map.

- A. What is the scale on the map?
- B. What variable is represented?
- C. What is the range and unit for the scale?

4. Analyze the map.

- A. What patterns are there for the high values?
- B. What patterns are there for the low values?
- C. How do the values change by area?

5. When were the data on this map collected?

- A. What time frame is represented?
- B. Compare this map to a map for a different time frame for the same variable.
- C. What are the similarities and differences?

6. Ask a question about the map.

- A. Form a hypothesis about the data displayed on the map.
- B. What inference can you make about the cause of the data displayed?
- C. Compare this map to another map for a different variable for the same area.
What are the similarities and differences?





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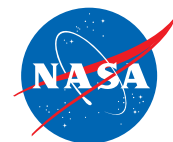
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- A. The color _____ shows the most. It means _____.
- B. The color _____ shows the least. It means _____.
- C. A pattern shows the color _____ in the areas that are _____.

2. Where on Earth is this map?

- A. The latitude goes from ____ to _____. The longitude goes from ____ to _____.
- B. This is a _____ map.

3. Summarize the map.

- A. The colors stand for the variable _____.
- B. The unit used for the variable is _____.

4. Analyze the map.

- A. The highest values show up in _____ areas.
- B. The lowest values show up in _____ areas.
- C. The values change from _____ in _____ to _____ in _____.
(value) (area) (value) (area)

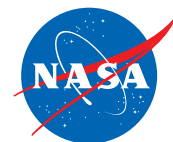
5. When were the data on this map collected?

- A. The word in the title that tells me the time frame is _____.
- B. The time frame shows the data for a day/week/month/quarter/year, etc.?

6. Ask a question about the map.

- A. How will _____ change when _____ changes?
- B. I wonder....
- C. Ask a question that starts with why, when, or where.





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